

REMARKS

Foreign Priority:

Applicant thanks the Examiner for acknowledging Applicant's claim to foreign priority under 35 U.S.C. § 119(a)-(d), and for confirming that the certified copy of the priority document has been received at the Patent Office.

Drawings:

Applicant thanks the Examiner for indicating that the drawings filed November 25, 2003 have been approved.

Claim Rejections:

Claims 1-8 are all of the claims pending in the present application, and currently all of the claims stand rejected.

35 U.S.C. § 102(b) Rejection - Claims 1-8:

Claims 1-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,049,761 to Hoshino et al. In view of the following discussion, Applicant respectfully traverses the above rejection.

As previously discussed, Hoshino discloses a vehicular traveling direction measuring system which uses geomagnetic measurements to determine the traveling direction of a vehicle. Specifically, the Hoshino system derives a weighting constant to be factored into the directional data, where the weighting constant is based on monitored magnitudes of geomagnetic disturbances around a vehicle (for example those caused by being on a metal bridge).

Specifically, in Hoshino a microcomputer 4 uses the frequency components of a sensor output (caused by magnetic disturbances) which differ from the sensor output due to the vehicle

turning to determine a direction of the vehicle. To accomplish this the microcomputer derives a ratio based on distances between the center coordinate of a standard azimuth circle (in a standard turn) and the X and Y coordinate values. If the ratio magnitude is over 1 then it is determined that a deviation is being caused by a disturbance. *See* col. 3, line 46 to col. 4, line 20.

In continuing to reject the claims, the Examiner alleges that Hoshino discloses using “historical” data in determining the vehicle direction. Specifically, the Examiner relies on the disclosure, of Hoshino, which teaches using both the “current cycle value” and the “prior cycle value” are used to derive the direction (*citing* col. 1, line 45 to col. 2, line 9). Further, the Examiner asserts that the “standard azimuth circle” is based on previous direction readings stored in the memory of the microcomputer (*citing* col. 4, lines 4-20 and col. 5, lines 6-50).

However, Applicant respectfully submits that this disclosure fails to disclose, teach or suggest the claimed invention. In fact, Applicant notes that this disclosure is no more relevant than the prior art discussed in the Background section of the present application, while suffering from the same drawbacks regarding those systems.

Specifically, Hoshino finds external disturbances from the detected values of the geomagnetic sensor and assigns the weighting to the detected values according to the amount of external disturbance. Because Hoshino uses this methodology, it is overly subject to great abnormal disturbances. Namely, in Hoshino if the conventional direction indicating device detects a large external disturbance when the vehicle is turning, because it assigns a large weighting to the detected values of the geomagnetic sensor, it degrades trackability in a vehicle display direction when the vehicle is turning.

Stated differently, if the Hoshino system detects a large disturbance during vehicle turning, for example in one of the prior cycles, that detected factor is used in the calculation of the current vehicle direction. Thus, when a large, abnormal, deviation is detected (through an anomaly), which does not accurately reflect the actual vehicle direction, this detected magnitude is used in further calculations of the vehicle direction, thus making the calculations inaccurate.

For example, when a vehicle with the Hoshino system is turning it may detect a large deviation (due to geomagnetic anomalies) which appear to show that the vehicle is heading North, when the vehicle is actually heading West. Even though this reading is inaccurate it is factored into the direction calculation. Thus, using the other factors, the Hoshino system may calculate the vehicle direction and show that the vehicle is moving North-West. Further, as described above, in the next calculation cycle the Hoshino system uses the previous data to aid in calculating the current direction. Thus, again, the inaccurate direction data is used in the vehicle direction calculation, which would again make the displayed vehicle direction less accurate.

The present invention provides a more accurate method of displaying the vehicle direction, because the present invention uses the historical display direction information of the “vehicle.” In the claimed invention, the device determines “a current display direction in consideration of historical information of the direction of the vehicle itself specified by the direction specifying unit and a previous display direction.” *See* claim 1. This is different than Hoshino.

In the present invention, the device uses the historical information of the direction of the vehicle itself specified by the direction specifying unit and the previous display direction. Hoshino does not function in this way as Hoshino uses previous “deriving mean data,” “standard

azimuth circle,” and “weighted values.” Thus, Hoshino uses the previously detected data, but not the previous displayed vehicle direction. In the present invention, the previous “display direction” of the vehicle is used in the determination of the current vehicle direction. This is not done in Hoshino.

Because of this aspect of the present invention, the present invention is more accurate than Hoshino. In Hoshino, the inaccurate historical data carries the same weight in each directional calculation in which it is used, and thus adversely affects the vehicle display data. This affect is reduced or eliminated in the present invention, where it is the historical vehicle display direction which is used, and not the underlying historical data which created an inaccurate vehicle display direction. Stated differently, the present invention reduces the import or affect of the inaccurate detected data by using the historical vehicle display direction.

There is no discussion or disclosure in Hoshino that the displayed vehicle direction is used as historical data to determine the current display direction of the vehicle.

In view of the foregoing, Applicant submits that Hoshino fails to disclose each and every feature of the claimed invention. Therefore, Hoshino fails to anticipate the claimed invention, as required under the provisions of 35 U.S.C. § 102(b). Accordingly, Applicant hereby requests the Examiner reconsider and withdraw the above 35 U.S.C. § 102(b) rejection of these claims.

Conclusion:

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. §1.114(c)
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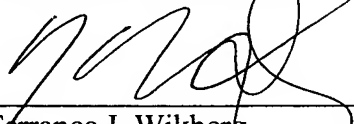
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